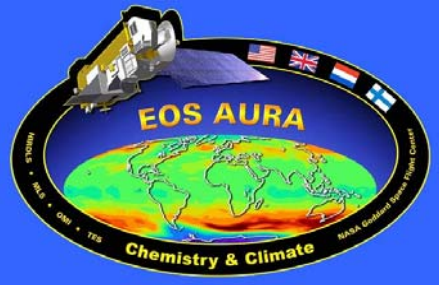


SSAI Science Systems and Applications, Inc.

Validation of OMI Products using data collected during INTEX-B

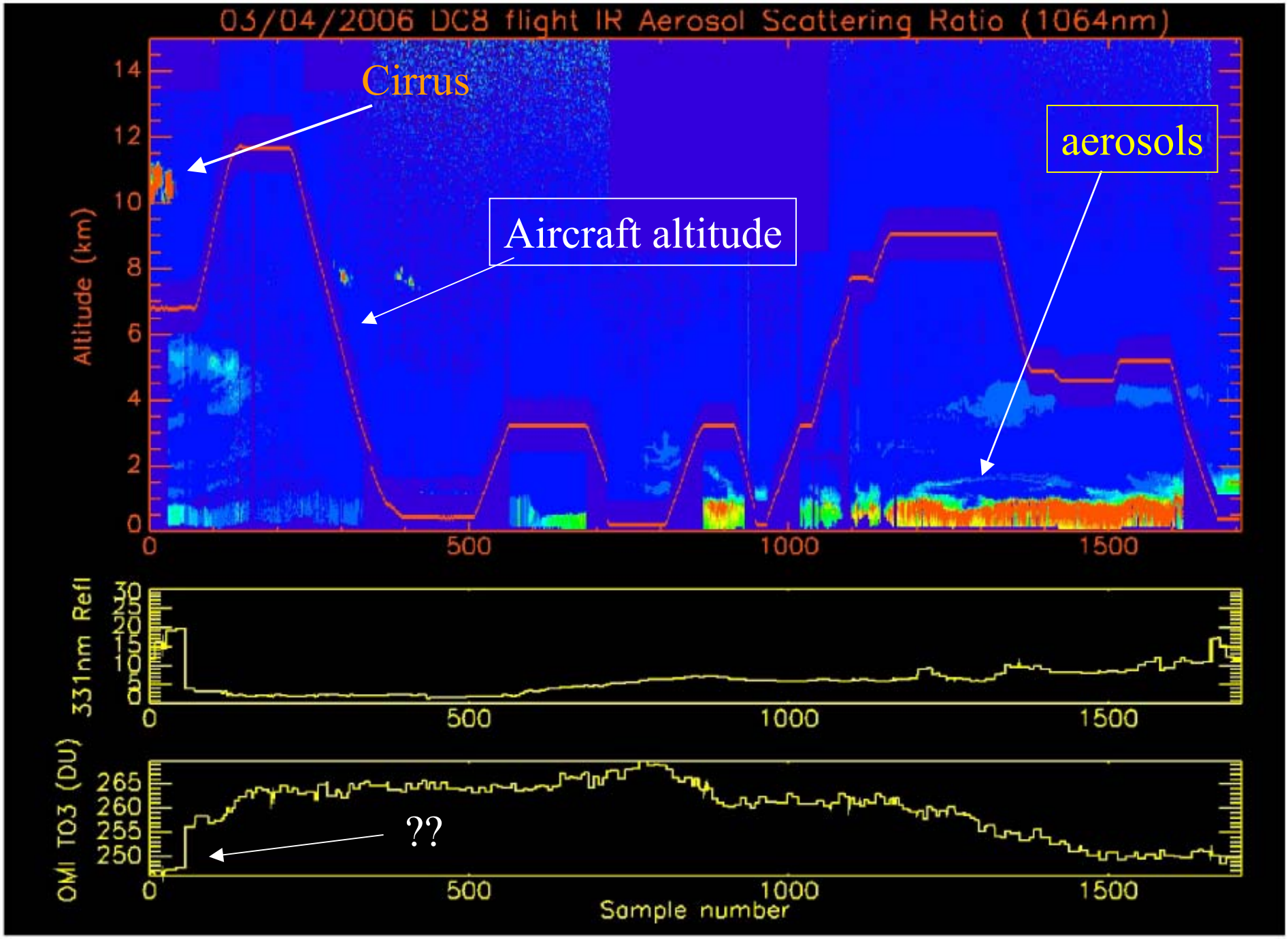
Gordon Labow, Ed Browell, John Hair

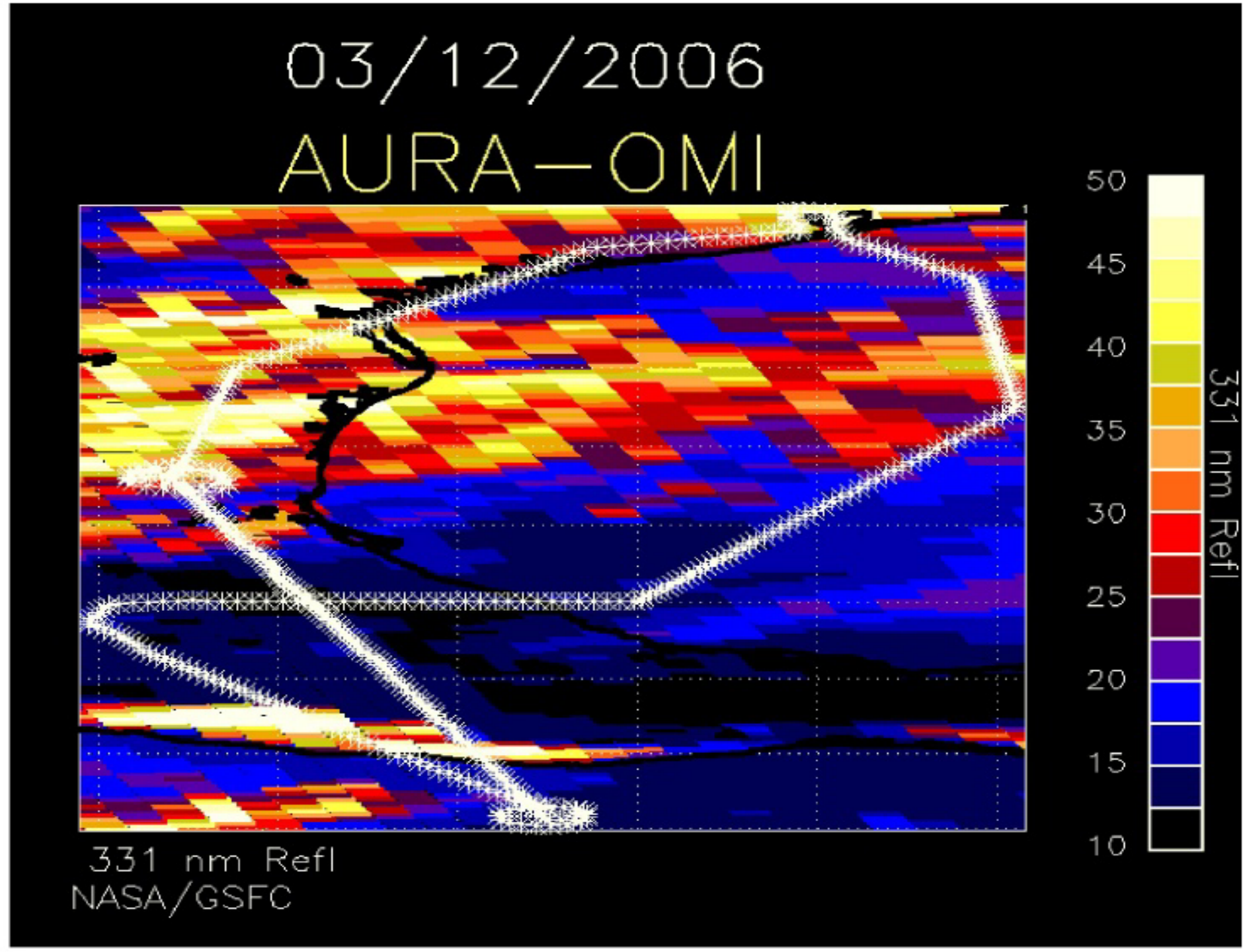
SSAI, NASA-Goddard & Langley Space Flight Center

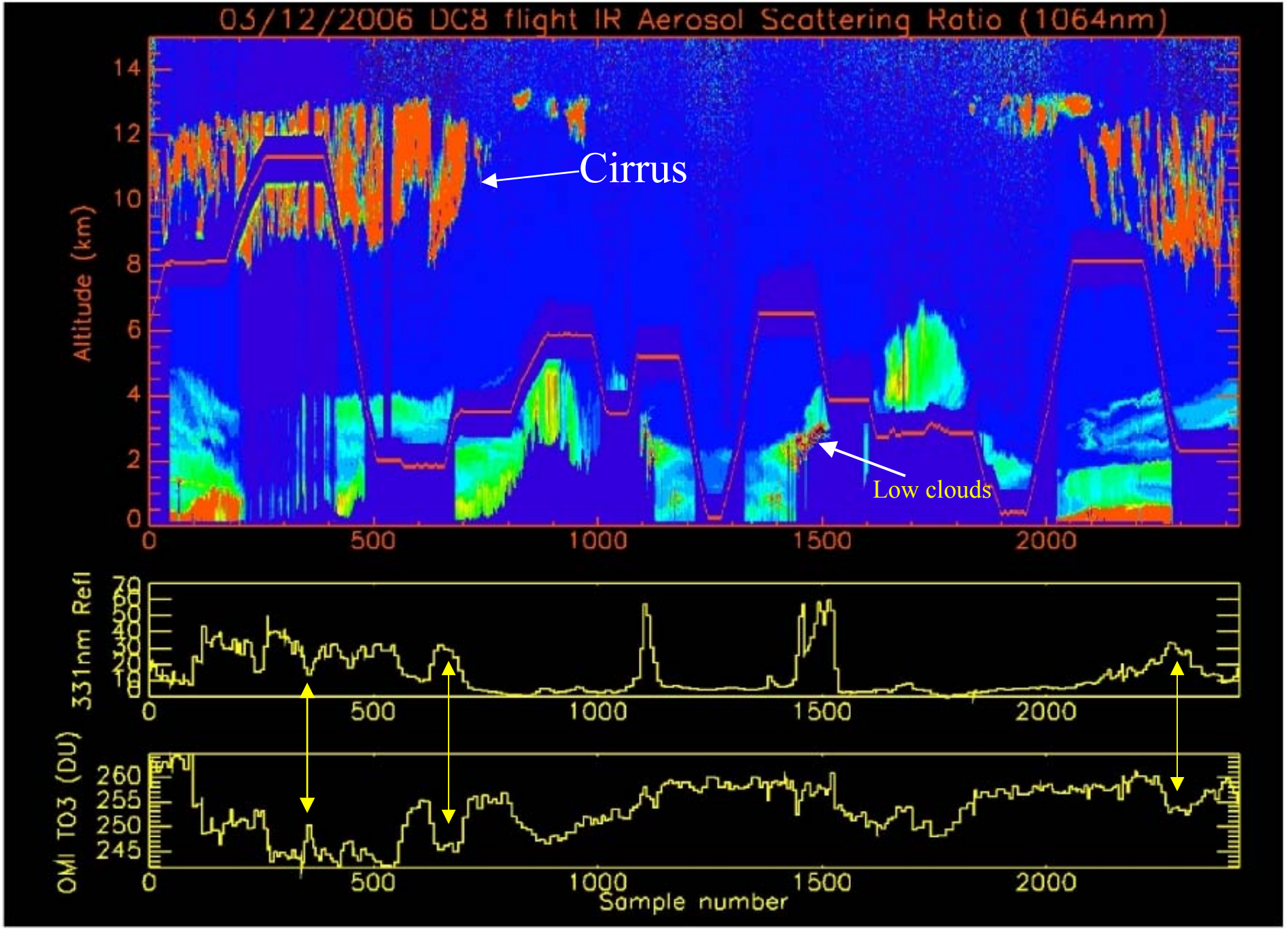
AURA Science Team Meeting, 12 September, 2006

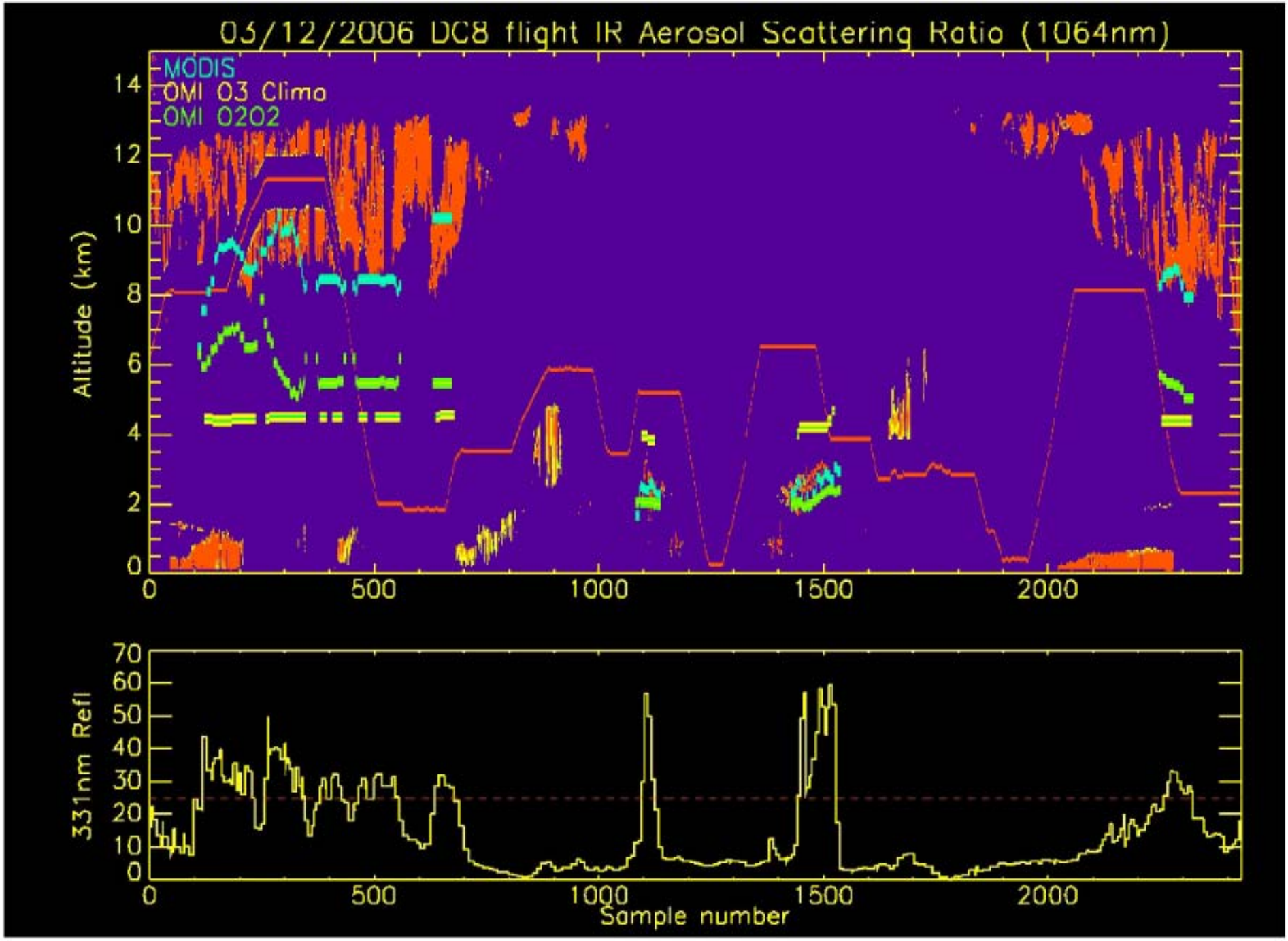
Over 100 different *in-situ* measurements

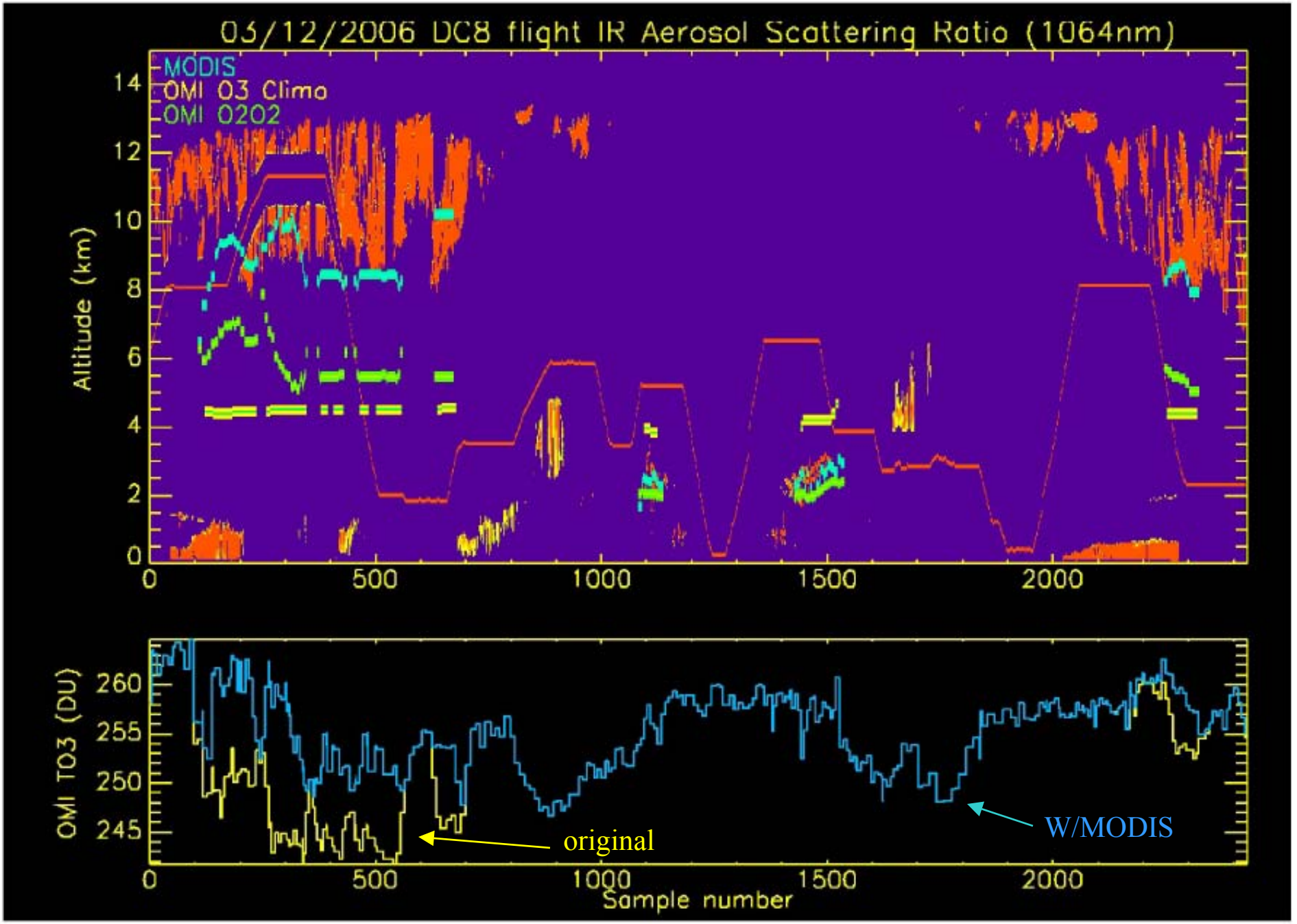
Ozone, Carbon Monoxide, Methane, CO_2, SSA, Condensation Nuclei, OH, HO_2, HNO_3, Sulfates, NO_2, Alkyl Nitrates, Methyl Peroxide (CH_3OOH), CH_2O, SO_2, NO, H_2O, Differential Mobility, 30+ J values, 10+ Optical particle counters, etc plus 2 Lidars

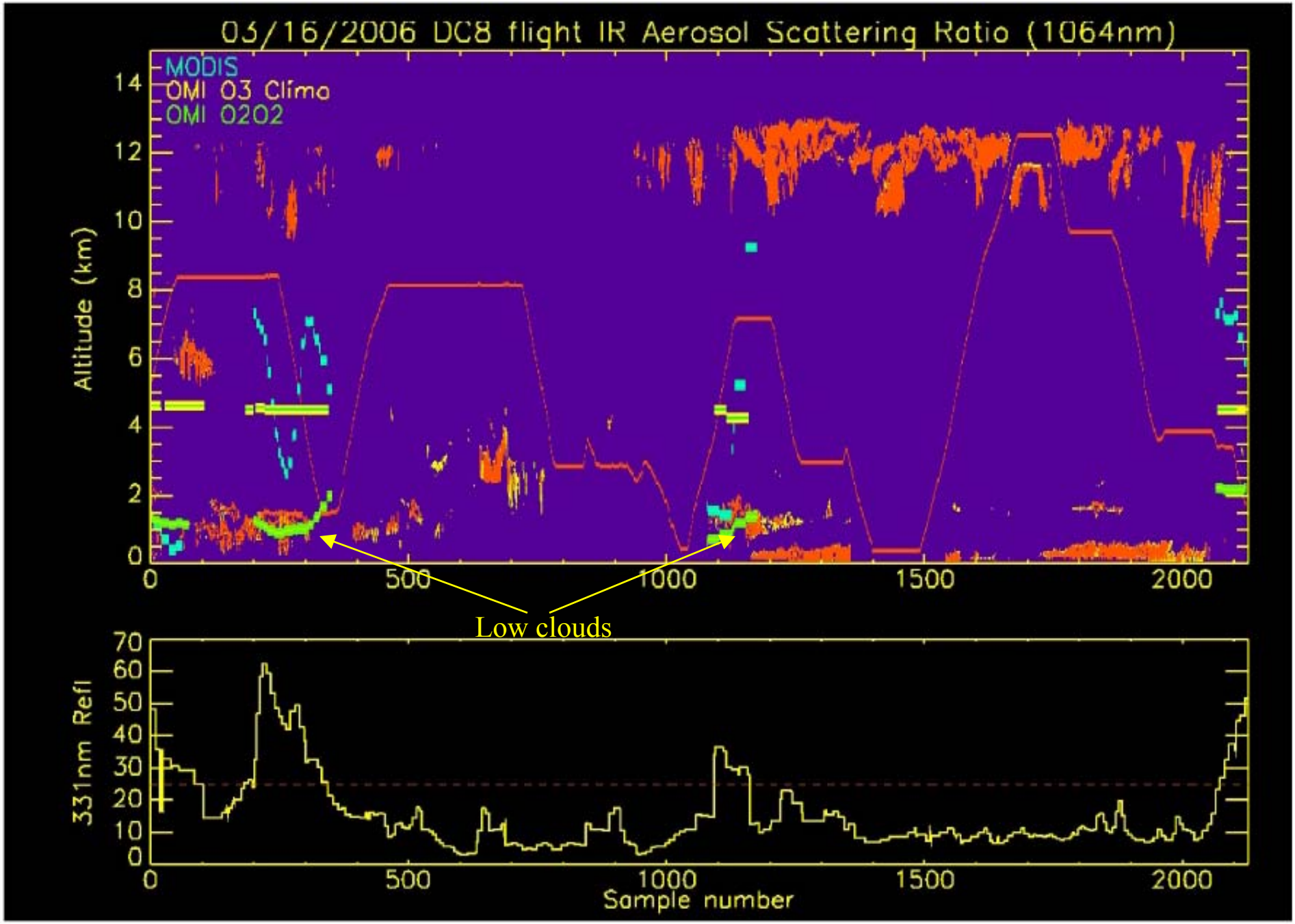

03/04/2006 DC8 flight IR Aerosol Scattering Ratio (1064nm)
Cirrus
Aircraft altitude
aerosols
Altitude (km)
0
2
4
6
8
10
12
14
0
500
1000
1500
331nm Refl
OMI TO3 (DU)
265
260
255
250
??
Sample number

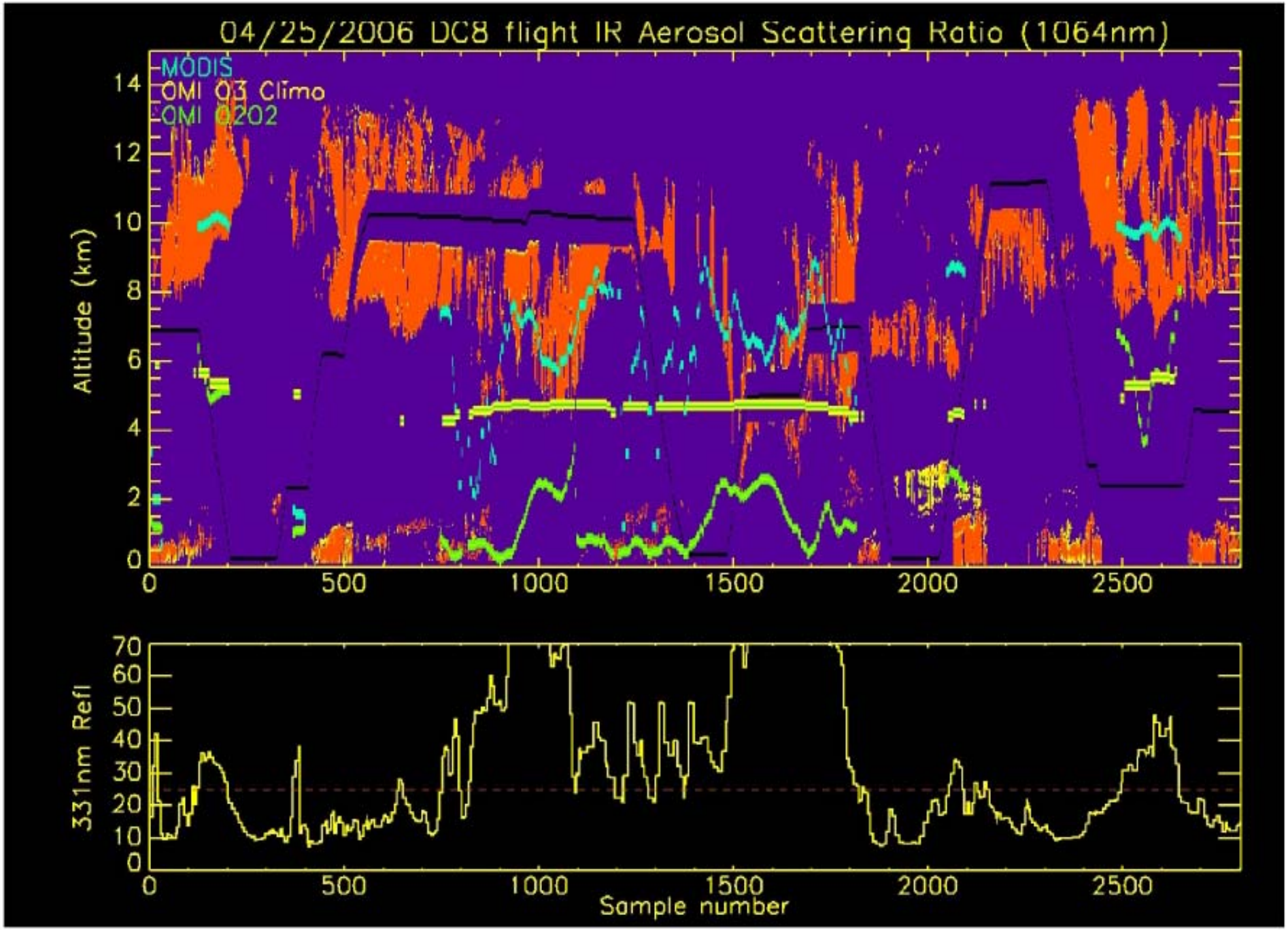

03/12/2006
AURA—OMI
50
45
40
35
30
25
20
15
10
331 nm Refl
331 nm Refl
NASA/GSFC

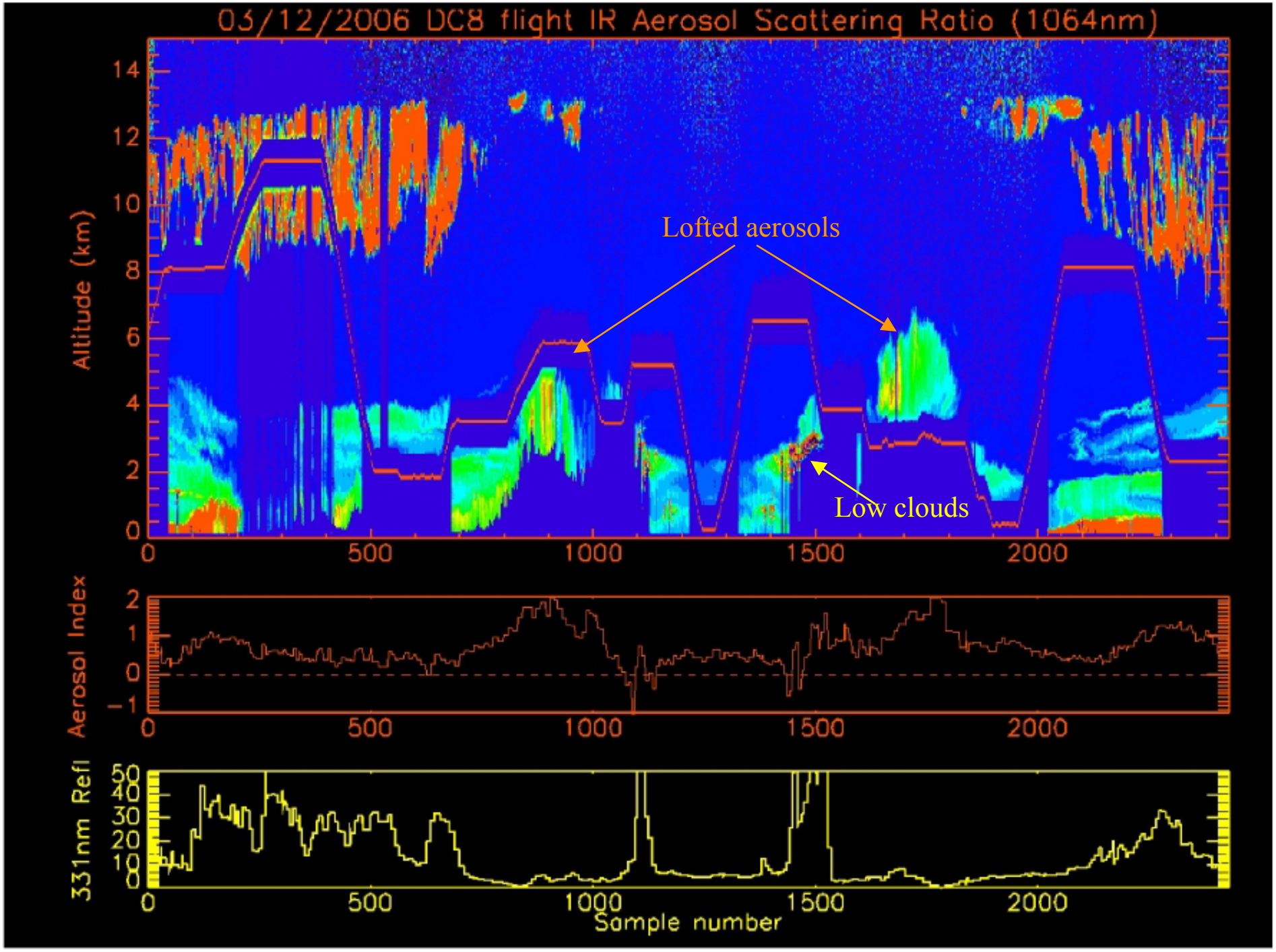

03/12/2006 DC8 flight IR Aerosol Scattering Ratio (1064nm)
Altitude (km)
Cirrus
Low clouds
331nm Refl
OMI TO3 (DU)
Sample number


03/12/2006 DC8 flight IR Aerosol Scattering Ratio (1064nm)
MODIS
OMI O3 Climo
OMI 0202
Altitude (km)
0
2
4
6
8
10
12
14
0
500
1000
1500
2000
331nm Refl
0
10
20
30
40
50
60
70
Sample number


03/12/2006 DC8 flight IR Aerosol Scattering Ratio (1064nm)
MODIS
OMI O3 Clima
OMI 0202
Altitude (km)
0
2
4
6
8
10
12
14
0
500
1000
1500
2000
OMI TO3 (DU)
245
250
255
260
original
W/MODIS
Sample number


03/16/2006 DC8 flight IR Aerosol Scattering Ratio (1064nm)
MODIS
OMI O3 Clima
OMI 0202
Altitude (km)
0
2
4
6
8
10
12
14
0
500
1000
1500
2000
Low clouds
331nm Refl
0
10
20
30
40
50
60
70
0
500
1000
1500
2000
Sample number


04/25/2006 DC8 flight IR Aerosol Scattering Ratio (1064nm)
MODIS
OMI 03 Climo
OMI 0202
Altitude (km)
0
2
4
6
8
10
12
14
0
500
1000
1500
2000
2500
331nm Refl
0
10
20
30
40
50
60
70
Sample number


03/12/2006 DC8 flight IR Aerosol Scattering Ratio (1064nm)
Altitude (km)
Lofted aerosols
Low clouds
Aerosol Index
331nm Refl
Sample number

What have we learned (so far)?

- High cirrus clouds cause trouble with ozone retrievals (both total column & *tropospheric*)
- Need for better cloud height input to ozone algorithm
- OMI & MODIS cloud top heights can be wrong
- Measured limits to our sensitivity to aerosols

What we still need:

Measurements of snow/ice vs clouds

More Lidar measurements from aircraft or satellite (bring on the Cloudsat data!!)